

BENEFITS AND OVERVIEW OF THE ELECTRONIC REPORTING TOOL (ERT)

Paul Baker
MACTEC, 5001 S. Miami Blvd, Research Triangle Park, NC, 27707
ptbaker@mactec.com

Ron Myers
US EPA, OAQPS/SPPD/MPG Research Triangle Park, NC, 27707
Myers.Ron@epamail.epa.gov

ABSTRACT

The Measurement Policy Group (MPG) in EPA's Office of Air Quality Planning and Standards has been working for many years to improve the quality of emissions factors by incorporating emissions data collected during well-conducted and well-documented source tests. MACTEC E&C, Inc. (MACTEC) has been working with MPG to develop the Emissions Reporting Tool (ERT) to facilitate the collection, quality assurance, and reporting of source test results. ERT provides a method to electronically create and submit stationary source sampling test plans to a regulatory agency, and, after approval, to collect, calculate and submit the test results as an electronic report to the regulatory agency. ERT also provides a way for the regulatory agency to send an export file to EPA to be imported into webFIRE for use in calculating emission factors. We will present an overview of ERT and the benefits to the users. These benefits include standardized reporting, streamlined test plans, and improved emission factors.

INTRODUCTION

Source test reports begin with the preparation of a test plan by the source or the source's contractor which is then sent to the regulatory agency for approval. Details such as information about the facility and name of the testing company, the test locations and test methods to be used, as well as process information are included in the test plan. Upon approval, the testing company, generally with an observer from the regulatory agency, performs the test, records the onsite information and lab analysis results. This information is used to perform the emission calculations and prepare a lengthy paper test report. The regulatory agency receives the test report and does a detailed assessment of the validity of the report. The assessment includes a manual check of the calculations as well as a determination if the included support documentation is sufficient to support the submitted results.

Historically, EPA has used the source test reports to develop emission factors. EPA obtained or conducted test reports supporting the NSPS/NESHAP. EPA also obtained test reports recovered from state files. Test reports were also supplied by industry. EPA reviewed and assessed the quality of the source test reports for compliance with the applicable methods for the pollutants tested and for the completeness of the supporting documentation of the test procedures. EPA performed an evaluation of the accuracy of the calculations and checked the indication of representativeness of the process, process operating conditions, control equipment, and control operation. EPA categorized the source tested by SCC, pollutant tested, and the controls employed. The test report information was summarized and the quality assessment of the background report was documented. This complete process typically took 4 to 8 hours per test report.

ERT was created to provide an electronic process for preparing, reviewing, and submitting source test reports as well as providing the results to EPA to provide improved emission factors. The areas of opportunity that ERT provides include improved coordination and information flow between sources, testers, reviewing agencies, and EPA; reduction of duplicative work; standardized reports; improved documentation; improved and standardized report QA; and integration with multiple program data flows, such as emission factors development, emissions inventory, and compliance and enforcement.

EMISSIONS REPORTING TOOL OVERVIEW

What is ERT

ERT is a Microsoft Access desktop application that is an electronic alternative for paper reports to document source tests and test plans for 19 of EPA's emissions measurement methods for stationary sources.

The test methods supported by ERT Version 3 currently include: Methods 1 through 4, Method 3A, Method 5, Method 6C, Method 7E, Method 10, Method 17, Method 25A, Method 26A, Method 29, Method 101, Method 101A, Method 201A, Method 202, CT Method 39, and CT Method 40. The pollutants quantified by these test methods include: Filterable Particulate Matter, Condensable Particulate Matter, Filterable PM₁₀, Filterable PM_{2.5}, Carbon Monoxide, Chlorine, Chloride, Hydrogen Chloride, Nitrogen Oxides, Sulfur Dioxide, Metals (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Phosphorus (yellow or white), Selenium, Silver, Thallium and Zinc), and total organic compounds (as Carbon, Ethane, Methane, Propane).

ERT replaces the time-intensive manual preparation and transcription of stationary source emissions test plans and reports currently performed by contractors for emissions sources and the time-intensive manual quality assurance evaluations and documentation performed by State agencies. The ERT provides a format that:

- highlights the need to document the key information and procedures required by existing EPA Federal test methods;
- facilitates coordination among the source, the test contractor, and the regulatory agency in planning and preparing for the emissions test;
- provides for consistent criteria to quantitatively characterize the quality of the data collected during the emissions test;
- standardizes the reports;
- and provides for future capabilities to electronically exchange information in the reports with facility, state or Federal data systems.

In addition to improving the content and quality of source emissions test reports, the ERT is designed to:

- reduce the workload associated with manual transcription of information and data contained in the report;
- reduce the resources required to store and access the reports, and;
- reduce redundant efforts in using the data for multiple purposes.

How ERT is used by the Source

The source fills out the test plan and test report areas of ERT to create a project data set for the source test. Support documentation such as flow diagrams and lab data is included in the project data set. ERT includes fields that have been designated as required by the EPA and/or regulatory agency. This ensures that this information will be included with the test report. ERT has flexible data entry screens where data can be entered from pick lists as well as free form text fields. ERT has the ability to print the test plan and the test report. The project data file for the test is transmitted to the agency through email and an FTP site. Future plans are to include the EPA's Central Data Exchange (CDX) as a transport method.

Test Plan

- Source testers enter test plan information including:
 - Facility / Tester
 - Permit / SCC / Process
 - Locations / Methods
 - Audit / Calibrations
 - Schedule / Signatures
 - Attachments (Diagrams, Calibrations, Other supporting documentation)

Test Plan

Test Plan Title: Emissions Testing of Wood Chip Dryer 2 Test Plan Date: 5/25/2005

Facility/Tester Permit/SCC Regulations Process/APCD Locations/Methods Methods cont. Audit/Calibrations Schedule Signatures Attach.

Facility Name:
Environ Mental Concious Furniture Co.

Address: 666 66th St N Ave **AFS Number:** _____

City: Boisenberry **Industry NAICS:** 30701415

State/Zip: NC 27854-4866 **FRS:** 27562

Contact: Enviro M. Concious **Lat/Long:** _____

Phone: (919) 666-2626 **Lat/Long:** _____

Fax: (919) 666-6262

email: enviro.concious@enviroconcious.com

Testing Company:
Emissions Factors & Policy Applications Group

Address: OAQPS/EMAD (C312-02)

City: Research Triangle Park

State/Zip: NC 27711

Contact: Ronald E. Myers

Phone: (919) 541-5407

Fax: (919) 541-1065

email: myers.ron@epa.gov

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Figure 1 - ERT Test Plan Facility/Tester Screen

Test Plan

Test Plan Title: Emissions Testing of Wood Chip Dryer 2 **Test Plan Date:** 5/25/2005

Facility/Tester Permit/SCC Regulations Process/APCD Locations/Methods Methods cont. Audit/Calibrations Schedule Signatures Attach.

4a. Enter the process data to be documented during testing. (note: required before test data entry)

Process Parameter	Units	Target Value	Comments
Oven-dried Wood Produced	s/million BTU using	0	
PTB Test Stuff	dfjkd	90	
Oven Concentration	percent	4	

Record: 1 of 7

4b. Enter the process lab data to be documented during testing. (note: required before test data entry)

Analysis Required	Units	Comments
Wood Moisture Content of feed material	percent	
Wood Moisture Content of product	percent	
Wood density of feed material	lb/ton	
Wood density of product	lb/ton	

Record: 1 of 4

5a. Please give a brief description of the source (including control equipment) and attach source or process flow diagram:

""PROCESS DESCRIPTION
Figure 2-1 illustrates the basic processing steps for OSB production. The steps are:
Logs are slashed, debarked, cut into shorter lengths, and sliced into thin wafers.

5b. Control Devices: (note: required before test data entry)

Control Device Parameters
FABRIC FILTER
FABRIC FILTER - MEDIUM TEMPERATURE, I.E. 180F<T<25
BOILER AT LANDFILL

Record: 1 of 4

Column widths may be changed by user.

Figure 2 - ERT Test Plan Process/APCD Screen

Test Plan

Test Plan Title: Emissions Testing of Wood Chip Dryer 2 **Test Plan Date:** 5/25/2007

Facility/Tester Permit/SCC Regulations Process/APCD Locations/Methods Methods cont. Audit/Calibrations Schedule Signatures Attach.

Please enter attachments.

Attachment Description:	Attachment (right click to insert file):
Source/Process Flow Diagram	Package
Alternate Method Request and Approval (Item 8) (optional)	Adobe Acrobat 7.0 Document
EPA Method 1 Location Supporting Documentation (Item 9) (optional)	
Cyclonic Flow Absence Supporting Documentation (Item 10)	
Pre-Test Meter Boxes/DGMs Calibrations	Adobe Acrobat 7.0 Document
Post-Test Meter Boxes/DGMs Calibrations	
Nozzles Calibrations	
Pitots Calibrations	
Thermocouples Calibrations	
Sampling Locations Dimensions and Point Locations	Package
Run Field Data Sheets	
Moisture Recovery	
Lab Data	
Chain-of-Custody	
Observer Comments	
APCD Diagram	Package
*	

Record: 1 of 16

To add an attachment:
- right click on the filename
- select "insert object"
- select "create from file"
- browse to the folder containing the file and select the file

Figure 3 - ERT Test Plan Attachments Screen

Field Data Collection

- Use Excel spreadsheet application used by many contractors
 - Modified to extract critical information into the ERT Access application
- ERT application duplicates calculations in spreadsheet program using equations from FR methods

The screenshot displays a Microsoft Excel spreadsheet titled "ERT v3 Spreadsheet.xls". The spreadsheet is organized into several sections:

- Header Section:** Contains fields for Plant, Address, Location, Equipment, and various parameters like Flow, Temp, and Pressure.
- Equipment Section:** Lists equipment details such as Equipment ID, Cat, and Manufacturer.
- Flow Section:** Contains flow rate data, including Flow Rate, Flow Unit, and Flow Direction.
- Temperature Section:** Lists temperature measurements, including Temperature, Temp Unit, and Temp Location.
- Pressure Section:** Lists pressure measurements, including Pressure, Pressure Unit, and Pressure Location.
- Velocity Section:** Lists velocity measurements, including Velocity, Velocity Unit, and Velocity Location.
- Stack Section:** Contains stack gas data, including Stack Gas Flow, Stack Gas Temp, and Stack Gas Pressure.
- Calculation Section:** Contains various calculations, including Flow Calculations, Temperature Calculations, and Pressure Calculations.

Figure 4 - ERT Field Data Spreadsheet

The screenshot displays the "Run Data Details" window in the ERT application. The window is divided into several sections:

- Facility:** Environ Mental Concious Furniture Co.
- Permitted Source ID/Description:** DR2 Dryer 2
- Select Location - Method:** stack - M
- Select Run:** Method 29A - Stn-29A
- Method Setup:** Calibrations ITM Run Re
- Compounds for this Location:** A table with columns for Location, Method, and Total organic carbon.
- Import Field Run Data:** A section with checkboxes for "1. Select Location", "2. Select Spreadsheet File", "3. View/Edit Imported Records", and "4. Add imports into main data table".
- Printed Reports:** A section with buttons for "Test Plan", "Test Plan Review", "Test Report", "Report Signatures", and "Emission Factor Export".
- Imported Header Data:** A table with columns for Location, Method, RunNumber, RunDate, JobNumber, Personnel, Pb, Pstatic, FilterNum1, FilterNum2, FilterNum3, ReagBox, Umbical, and Si.
- Imported Point Data:** A table with columns for Location, Method, Run #, Job #, Run Date, Point, Begin, End, Clock, Gas Meter, Velocity, Stack Temp, Dry Gas In, and Dry Gas C.

Figure 5 - ERT Field Data Import Screen

Test Report Data

- Field test information is only stack gas information
- Laboratory data added to report
- Process data added to report

Facility: Environ Mental Concious Furniture Co.
Permitted Source ID/Description: DR2 Dryer 2
Select Location - Method: stack - Method 29
Add New Run Data Delete Run Data
Select Run: Method 29 - 1 Change Run Number

Method Setup Header Data Point Data Lab Data Sampling/Stack Data Results Cyclone Cut Size Emissions

Method: Method 29 RunNumber: 1 RunDate: 12/23/2004

Sampling Train Parameters:		Stack Gas Parameters:			
NetRunTime:	64	% H2O:	37.81	Vs:	34.44
NetTravPts:	16	% H2Osat:	38.04	Dstk:	72
Dn:	0.297	Mfd:	0.6219	Dwdth:	0
Cp:	0.84	% CO2:	7	Dlngth:	0
Y:	0.991	% O2:	13.2	As:	28.274
Pb:	30.04	% CO + N2:	79.8	Qsd:	30,697.9
DeltaH:	1.07	Fo:	1.10	Qaw:	58,425.4
Vm:	36.980	Md:	29.65	MMBtu/Hr:	73.44
tm:	84.66	Ms:	25.25		
Vmstd:	35.762	Pg:	-0.18		
Vlc:	461.9	Ps:	30.03		
Vwstd:	21.74	ts:	167.25		
% I:	107.0	DeltaPavg:	0.278		

View All Runs

Figure 6 - ERT Test Report Sampling/Stack Data Results Screen

Facility: Environ Mental Concious Furniture Co.
Permitted Source ID/Description: DR2 Dryer 2
Select Location - Method: stack - Method 29
Add New Run Data Delete Run Data
Select Run: Method 29 - 1 Change Run Number

Method Setup Header Data Point Data Lab Data Sampling/Stack Data Results Cyclone Cut Size Emissions

Method: Method 29 RunNumber: 1 RunDate: 12/23/2004

	Fwt	Mass_mg	lb/dscf	Compound	gr/dscf
▶	52	20.00	1.2329425E-06	Chromium	0.00863
	207.19	20.00	1.2329425E-06	Lead	0.00863
	54.94	20.00	1.2329425E-06	Manganese	0.00863
	58.71	20.00	1.2329425E-06	Nickel	0.00863
	107.87	20.00	1.2329425E-06	Silver	0.00863
	65.38	20.00	1.2329425E-06	Zinc	0.00863

Record: 14 of 6

Figure 7 - ERT Test Report Emissions Screen

How ERT is used by EPA

Information deemed critical to EPA and the other regulatory agencies can be established as required fields in ERT. This will ensure that the test plans and test reports produced by ERT contain the required information. The review of the test plan and report is accomplished through a set checklist in ERT. Each checked data item can receive a comment to explain what is deficient and what is required. ERT produces an XML export file that the regulatory agencies can send to EPA for inclusion in webFIRE for use in improving emission factors. ERT also has the ability to export other information that may be used in EPA or other regulatory agency systems.

Test Plan Review

- Provides test contractor feedback on information needed prior to test
- Allows state/local agency evaluation of proposed test program
- Notifies state/local agency of test date and special access requirements
- Allows for linked and improved documentation of acceptance or comments

Figure 8 - ERT Test Plan Review Comments Screen

Test Report Data Quality Evaluation

- Evaluates primarily the availability of documentation of critical instrument calibration and field data elements
- Evaluates compliance with published FR test method requirements

State Review of Test Report

Facility: Environ Mental Concious Furniture Co.

Permitted Source ID/Description: DR2 Dryer 2

Select Location - Method: stack - Method 29

Process DQs Run DQs Average Emissions

Method: Method 29 RunNumber: 1 RunDate: 12/23/2004

ID	Question	Value (Y/N)
55	Is the posttest leak check presented for each run and does it meet the criteria of < 0.02 cfm?	
56	Is annual and post-test DGM calibration data included in the report? Does DGM calibration data meet the QA specifications?	
57	Is the isokinetic sampling ratio between 90 and 110 %?	
58	Is nozzle calibration data included in the test report? If so, do the nozzle calibrations meet the required QA specifications?	
59	Is the raw field data included in the test report?	
60	Are copies of laboratory data included in the test report, and are the laboratory reports complete and correct?	
61	Are the sample custody records included in the test report?	
62	USE A GRADUATED SCALE BASED ON MGs??? - Is the 3-run or grouped runs RPD < 30% (50%?)	
63	Was the probe temperature within the method specs?	

Use buttons below to change runs:

State Review Run Status:

Record: 1 of 3

Figure 9 - ERT Test Report Data Quality Questions Screen

State Review of Test Report

Facility: Environ Mental Concious Furniture Co.

Permitted Source ID/Description: DR2 Dryer 2

Select Location - Method: stack - Method 29

Process DQs Run DQs Average Emissions

Applicable State and Federal Regulations for this Test Report:

Regulation	Compound	Limit	Unit	Does the data demonstrate compliance?
Reg Desc Test PTB	Arsenic	0.002	lb/hr	No

All Runs for Selected Compound: Compound: Arsenic

RunNumber	RunDate	gr/dscf	Elb/hr
1	12/23/2004	0.00647	1.7032
2	12/23/2004	0.00558	1.5658
3	12/23/2004	0.00857	1.9081

Record: 1 of 3

Record: 7 of 7

Figure 10 - ERT Test Report State Review Screen

ERT Benefits to the Source

- **Streamlined Test Plans** – Standardized test plans will shorten the State review and approval time allowing for quicker start for the source test.
- **Standard Report for all States** – Source testers working in different States can use ERT for test plans and test reports, eliminating the need for different report formats and requirements for each State.

ERT Benefits to the States

- **Standardized Reporting** – Reports from different testers are currently in different formats. ERT will standardize all reports to allow for easier review. This means the same information will be reported by all sources.
- **“Step through QA”** – ERT steps the reviewer through the QA process. This provides a standard way of reviewing all reports which can greatly reduce the QA review time. ERT also allows the quality of the test report to be assessed quantitatively.
- **Better Emission Factors** – Because the purpose of the ERT is to provide data for webFIRE emission factor calculations, the more ERT is used, the more data will be available and the more representative and complete the factor calculations.

Possible ERT Data Applications

Source test data collected in ERT has several possible uses. These include:

- Improved emissions factors by importing the exported project data set data into webFIRE
- Improve test report assessment for compliance evaluation through use of ERT’s data quality questions
- Initiator of non-EF data flow
 - Population of internal data systems
 - AIRS/AFS submissions
 - Emissions inventory submissions
- Use for Emissions Standards data
 - State limits (non-Federal, SIP)
 - Federal NSPS, MACT, NSR/PSD

Planned Improvements

- ANPR suggesting requirement for electronic submission (Part 60, 61 & 63 test reports)
- Identify additional data fields for export routine
- Develop data definition and formatting standards for exported data fields
- Develop capability for ERT submission through CDX
- Evaluate methods to make ERT CROMERR compliant
- Expand test methods submitted by ERT

CONCLUSIONS

Using ERT to produce source test reports can replace the resource intensive manual manipulation of paper test reports. ERT provides a single location for planning, calibration, field sampling, field inspection, and data quality assessment documentation. Data critical to EPA and other regulatory agencies are highlighted and required in ERT, increasing the chance the data are provided in the test reports. Coordination and communication between the sources and regulatory agencies is facilitated and enhanced by the transmission of the test report project data set created by ERT, potentially reducing the number of resubmitted plans and reports. Sources and agencies benefit from having standardized reports, reducing the time for review and approval of source tests. EPA and emission factor stakeholders benefit from having an efficient way to collect source test information which can be used for creating improved emission factors.

ERT is available for download at www.epa.gov/ttn/chief/ert/ert_tool.html.

KEY WORDS

Source Test

Emission Factors